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DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

McCALL SUMMER CHINOOK SALMON HATCHERY

Annual Repor

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Annual Report

1 October 1982 – 30 September 1983

by

Bill G. Hutchinson
Fish Hatchery Superintendent II

November 1984

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McCALL SUMMER CHINOOK SALMON HATCHERY

ABSTRACT

During April 1983, 183,896 summer chinook smolts were released nthe South Fork Salmon River. Prior to release 62,188 fish were oded-wire tagged, of which, 24,862 were freezebranded. This is the irst smolt release in which all of the fish originated from eggs ollected at the South Fork.

From the 648,520 eggs collected from returning adults at the South ork trapping facility during 1982, approximately 370,000 fingerlings re on hand for release in April 1984.

During July, August and September 1983, 433 two- and three-ocean fish nd 504 one-ocean fish collected at the South Fork trap. Twenty-three ercent of these fish were released upstream for natural pawning. A total of 750,634 eggs were collected from 180 females, and t the end of the fish year, nearly 657,000 eyed-eggs were on hand.

During March 1983, 167,895 spring chinook smolts were released in he Salmon River upstream of the Sawtooth Hatchery site.

From the 451,902 spring chinook eggs received from the Sawtooth rapping facility during 1982, approximately 350,000 fingerlings are on and for release in 1984.

During August and September 1983, 650,196 spring chinook eggs were ollected at the Sawtooth trap and transported to McCall for hatching nd rearing. Resultant fish will be released in the Salmon River in he spring of 1985.

Again this year, "Spring Thing" accounted for most of the mortality xperienced by our chinook. Twenty percent of both the 1982 brood year ummer and spring chinook died as a result of this yet unknown isease. Bacterial Kidney Disease (BKD) was found in these fish during ugust. A treatment of erythromycin was administered and no ignificant mortality was attributed to this disease.

Another feed study was conducted this year as part of a continuing ffort to find the cause of "Spring Thing".

The "clean-up" contract to correct deficiencies at the South Fork rapping facility and the hatchery was completed this year by Barton onstruction Company, Boise, Idaho.

uthor:
ill G. Hutchinson
ish Hatchery Superintendent II

OBJECTIVES

The objectives of the McCall Hatchery are:

FEDERAL

1. Raise 500,000 summer chinook smolt for release in the South Fork Salmon River.

2. Trap and spawn adult salmon returning to the South Fork Salmon River.

3. Raise 500,000 spring chinook smolts for release in the Salmon River.

4. Evaluate fish rearing capabilities of the McCall Hatchery.

STATE

1. Redistribute approximately 25,000 pounds of catchable-size rainbow trout into area lakes and streams.

2. Hatch and rear approximately 500,000 trout fry for stocking in lowland waters and mountain lakes and for redistribution to other stations.

3. Stock nearly 600 mountain lakes in Regions 2 and 3 on a three-year rotation basis.

4. Operate and maintain a fish trap at Fish Lake for the purpose of obtaining westslope cutthroat eggs.

This report covers all federal objectives accomplished at McCall atchery. For a report on state objectives see Hutchinson (1984).

INTRODUCTION

The McCall Summer Chinook Hatchery was constructed in 1979-1980 as art of the Lower Snake River Compensation Plan (LSRCP). Congress authorized the LSRCP to compensate Idaho, Oregon and Washington for osses for fish and wildlife caused by the Lower Snake River Projects (Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams). his plan will provide hatchery capacity for the rearing of 9,160,000 hinook salmon smolts, 6,750,000 steelhead smolts and 93,000 pounds of esident sport fish. McCall Hatchery is the first hatchery to be onstructed as partial fulfillment of the LSRCP.

McCall Hatchery was constructed by the U.S. Army Corps of Engineers, is funded by the U.S. Fish and Wildlife Service, and is operated by the Idaho Department of Fish and Game. It is located within the city limits of McCall, Idaho, on the North Fork Payette River, approximately 1/4 mile downstream from the Payette Lake regulating dam. Hatchery water is obtained from Payette Lake via a 36-inch underground pipeline. Two inlets, one at the surface near the dam, the other at a depth of 50 feet, approximately 1,500 feet from shore, provide the capability of obtaining the best water temperature available (Fig. 1). At Maximum capacity, the facility requires 20 cfs of water. The fish rearing facilities include: 26 eight-tray stacks of Heath incubators, two fiberglass Heath troughs (1.75' x 15.5'), 14 concrete vats (4' x 40[1]), two outdoor concrete rearing ponds (42' x 200') and one collection basin (15' x 101'). The design capacity of the hatchery is for production of 1,000,000 smolts at approximately 17 fish per pound.

An adult trapping and spawning facility is located on the South Fork Salmon River, near Cabin Creek, approximately 26 miles east of Cascade, Idaho. This facility is equipped with a removable fish weir, fish ladder, trap, two adult holding ponds (10' x 88') and a covered spawning area. Water is supplied from the South Fork through a 33-inch-diameter underground pipe. Holding capacity for the facility is 750 adults. A portion of the returning adults are released above the fish weir for natural spawning. After spawning, the green eggs are transferred to McCall for incubation, hatching and rearing.

GENERAL FISH CULTURE AND HEALTH

Loading

Heath incubators are loaded with approximately 80 ounces of eggs per tray. Eyed-eggs are shocked after accumulating 500 temperature units (T.U.), and mortality is removed by using the salt floatation method described by Lietritz and Lewis (1976).

After accumulating 1,600 T.U., fry are transferred to vats. Vat rearing volumes are established and changed by setting screens and drop gates at various distances and depths, insuring that fish densities are maintained at or below the Maximum Density Index (MDI) as recommended by Klontz (1979). Fish are transferred to the outdoor rearing ponds when they are about 250 fish per pound and held until their release, approximately 17 fish per pound.

Hygiene

Eggs received at McCall are disinfected in a 1:300 solution of Argentyne and water for 10 minutes. A 0.5% concentration of sodium bicarbonate is added as a buffering agent against the acidfying effects of Argentyne in soft water (Wood 1979). An ultraviolet light water

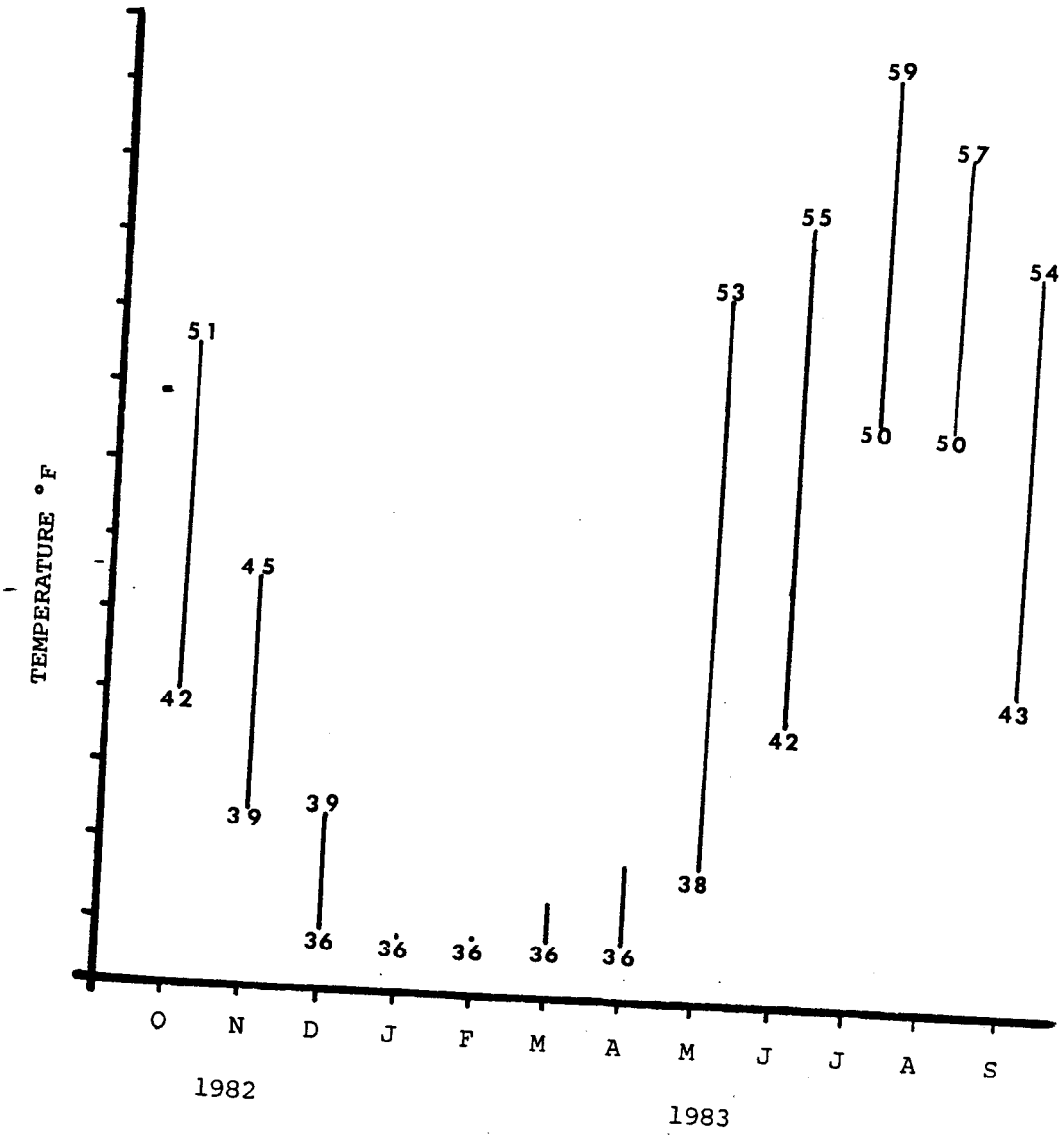


Figure 1. Monthly temperature ranges of McCall Hatchery water.

purification system is used on incubation water, and for added protection against fungal invasion, eggs are periodically administered malachite green flushes.

Hatchery vats are cleaned daily and brushes and nets designated for each vat are disinfected in a 600 ppm Benzalchonium Chloride (50%) solution after each use. Hatchery personnel are required to disinfect their hands before cleaning any vat. Mortality is collected daily, recorded and frozen for proper disposal. The outside rearing ponds now have concrete bottoms and are cleaned as needed by means of a vacuum system with eventual discharge into the settling pond. Pond mortality is collected, recorded and frozen for disposal.

Inventories

Fish are inventoried on the 1st and 15th day of each month. Length/weight relationships are determined, feeding levels adjusted, NDI is calculated, and necropsies are performed on a few fish to monitor general fish health.

SOUTH FORK BROOD YEAR 1981 Production

From 4-7 April 1983, 183,896 (9,050 pounds) summer chinook smolts were released in the South Fork Salmon River at Knox Bridge (Table 1). They averaged 20.32 fish per pound and 134.3 mm (5.3 in) fork length. This smolt release is the first in which all of the fish originated from eggs collected at the South Fork.

Conversion

A total of 16,885 pounds of Oregon Moist Pellet (OMP)-II and OMP-IV fish feed was fed to produce 9,050 pounds of fish (Table 2). A conversion ratio of 1.87 was attained for this brood year.

Disease

No major disease problems were encountered in the 1981 brood year fish this year. A "heavy" infestation of the gill parasite Trichophrya sp. was present upon release, but no adverse effects could be observed in the fish.

SOUTH FORK BROOD YEAR 1982

Production

From the 648,520 eggs collected at the South Fork last year,

Table 1. McCall Hatchery fish production 1 October 1982 - 30 September 1983.

Brood year	Species	Numbers produced	Pounds produced
1981 1/	Summer Chinook	183,896	9,050
1981 1/	Spring chinook	167,895	5,850
1982 2/	Summer chinook	370,000	13,250
1982 2/	Spring chinook	350,000	14,550
Totals		1,071,791	42,700

1/ Planted

2/ On hand

Table 2. Feed conversion and cost per pound of fish produced.

Brood year	Species	Lbs of fish produced	Pounds feed fed	Cost	Conversion	Feed cost/lb produced
1981	Summer chinook	9,050	16,885	$6,461.64	1.87	$ 0.71
1981	Spring chinook	5,850	17,313	6,552.62	3.0	1.12
1982	Summer chinook	13,250	14,989	6,116.84	1.13	0.46
1982	Spring chinook	14,550	16,461	6,717.49	1.13	0.46
Totals		42,700	65,648	25,848.59	1.54	$ 0.61

Cost per pound of fish produced excluding capital outlay: $

approximately 370,000 (13,250 pounds) fish were on hand for release during April 1984 {Table 1).

Conversion

This brood year was used in a feed study and was fed various brands of feed (Hutchinson in print). A total of 14,989 pounds of feed was fed to produce 13,250 pounds of fish. A conversion ratio of 1.13 was attained for this brood year (Table 2).

Disease

Two major epizootics appeared in our 1982 brood year fish this year. The first appeared in March and was responsible for the loss of nearly 20% of this brood year. What we term as the "Spring Thing" was responsible, and infected fish exhibited the same symptoms as those reported by Wimer (1980) and Hutchinson (1981): flashing, hyperplasia of the gills, lethargy, no feeding response, some spiraling along the long axis, pinched-in appearance to the abdomen, yellowish fluid in the gut, and death as the end result. Samples of affected fish were sent to Rangen's Lab, Buhl, Idaho, for virological testing. Results came back negative. Fish samples were also sent to Charlie Smith (U.S. Fish and Wildlife Service, Bozeman, Montana) for histological examination. His report indicated that gill samples from infected fish exhibited the classic symptoms of Nutritional Gill Disease. in an attempt to finally identify the cause of this yearly problem, a two-year study concentrating on nutrition will begin next year.

A second major epizootic appeared in August with the discovery of Bacterial Kidney Disease (BKD). Hatchery personnel detected its presence through microscopic examination and a random fish sample was sent to Joe Lientz (U.S. Fish and Wildlife Service, Dworshak National Fish Hatchery) for an incidence rate by means of the Flourescent Antibody Test (FAT). Results indicated "light" concentrations of the bacterium, and in an effort to head off any potential problems, fish were fed feed containing erythromycin thiocyanate at 4.5 grams active ingredient per 100 pounds of fish for 21 days. FAT results after medication indicate only a slight reduction in the incidence of the bacterium.Although no significant mortality was attributed to the disease, BKD still remains a serious threat to McCall's salmon program.

A "light" infestation of trichophrya is present in the fish, but no mortality can be attributed to this parasite. This has become a yearly sr, Problem, yet no adverse effects are seen in the fish, and because of the harsh treatment required to eliminate this parasite, no actions have been taken to treat it.

ADULT RETURNS AND BROOD YEAR 1983

Trapping and Spawning

This year saw a record number of fish returns to the South Fork since we began operation of the trapping facility in 1980. Trapping began on 12 July and terminated on 6 September. During this time, 433 two- and three-ocean fish (240 females and 193 males) and 504 one-ocean fish (≤64 cm) were trapped (Fig. 2). Of these, 174 two- and three-ocean fish (55 females and 119 males) and 42 one-ocean fish were released upstream for natural spawning. Fork lengths of all fish were recorded at time of capture (Fig. 3).

Spawntaking began on 8 August and concluded on 6 September. During this period, 180 females were spawned, yielding 750,634 eggs, an average of 4,170 eggs per female (Table 3). Five females died prior to spawning from unknown causes.

All eggs taken at the South Fork trapping facility were rinsed and water-hardened for one hour in a two ppm (active ingredient) concentration of erythromycin (Gallimycin, Abbot). Nine of the spawned females showed gross visible signs of BKD.

Of the returning adults, 439 had adipose fins absent, indicating the possible presence of a coded-wire tag. Snouts from these fish were collected after spawning and sent to Rod Duke (IDFG Senior Fishery Research Biologist) for tag recovery and code identification (Table 4). Twenty-nine one-ocean fish contained National Marine Fisheries Service (NMFS) jaw tags that were placed on them when they were collected at Lower Granite Dam. Data obtained from NMFS on these tags enabled us to calculate travel days from Lower Granite Dam to the South Fork trap (Table 5). Average travel time was 25.6 days.

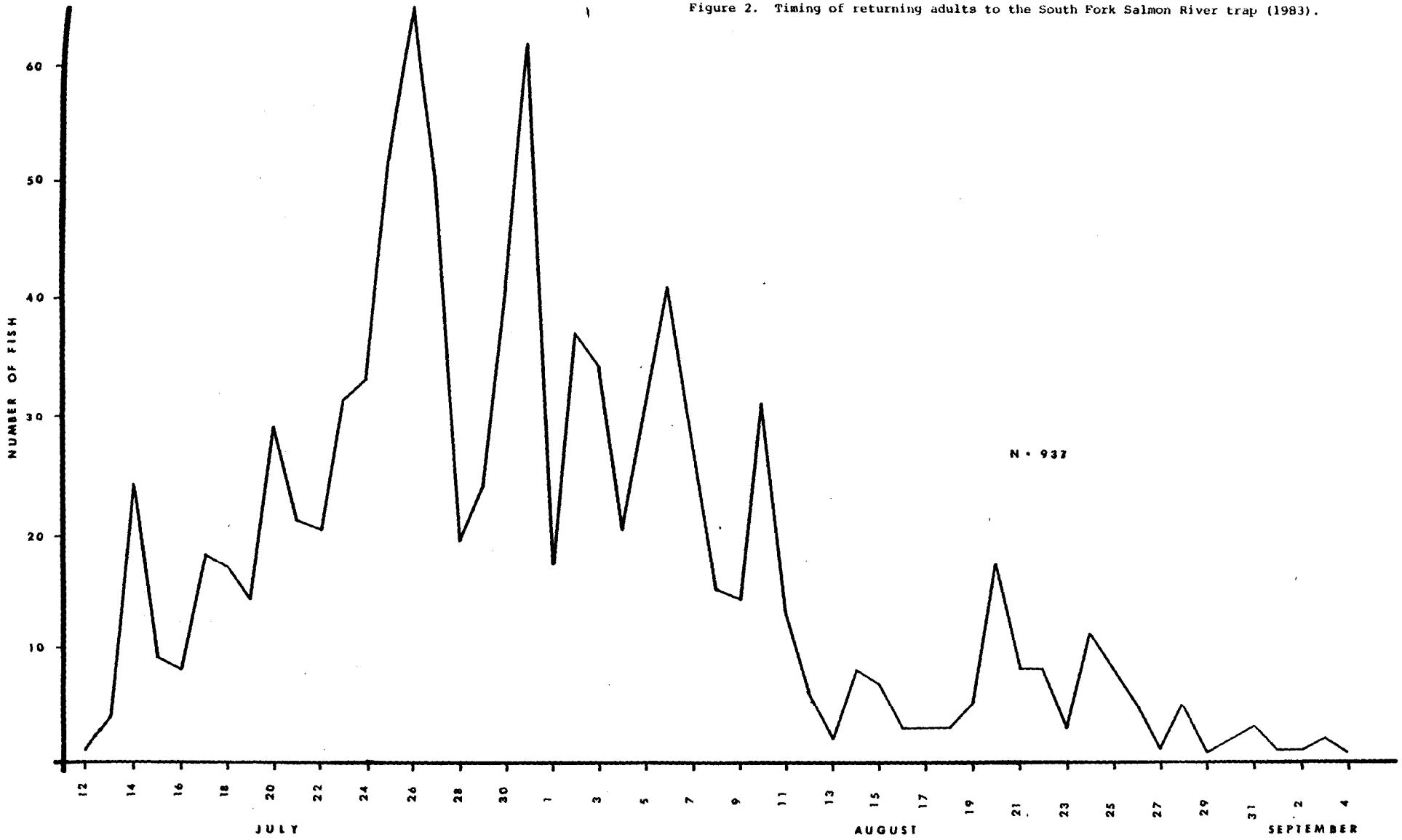
No injections of erythromycin were administered to the adults and all spawned-out fish suitable for human consumption were given to the general public. The Shoshone-Bannock Tribe received 276 fish for their tribal members.

SAWTOOTH BROOD YEAR 1981

Production

On 29 March 1983, 167,895 (5,850 pounds) spring chinook smolts were released-in the Salmon River upstream of the Sawtooth Hatchery site (Table 1). These smolts averaged 28.7 fish per pound and 108.6 mm (4.3 in) in fork length. This was the first smolt release resulting from eggs collected at the Sawtooth facility.

Figure 2. Timing of returning adults to the South Fork Salmon River trap (1983).



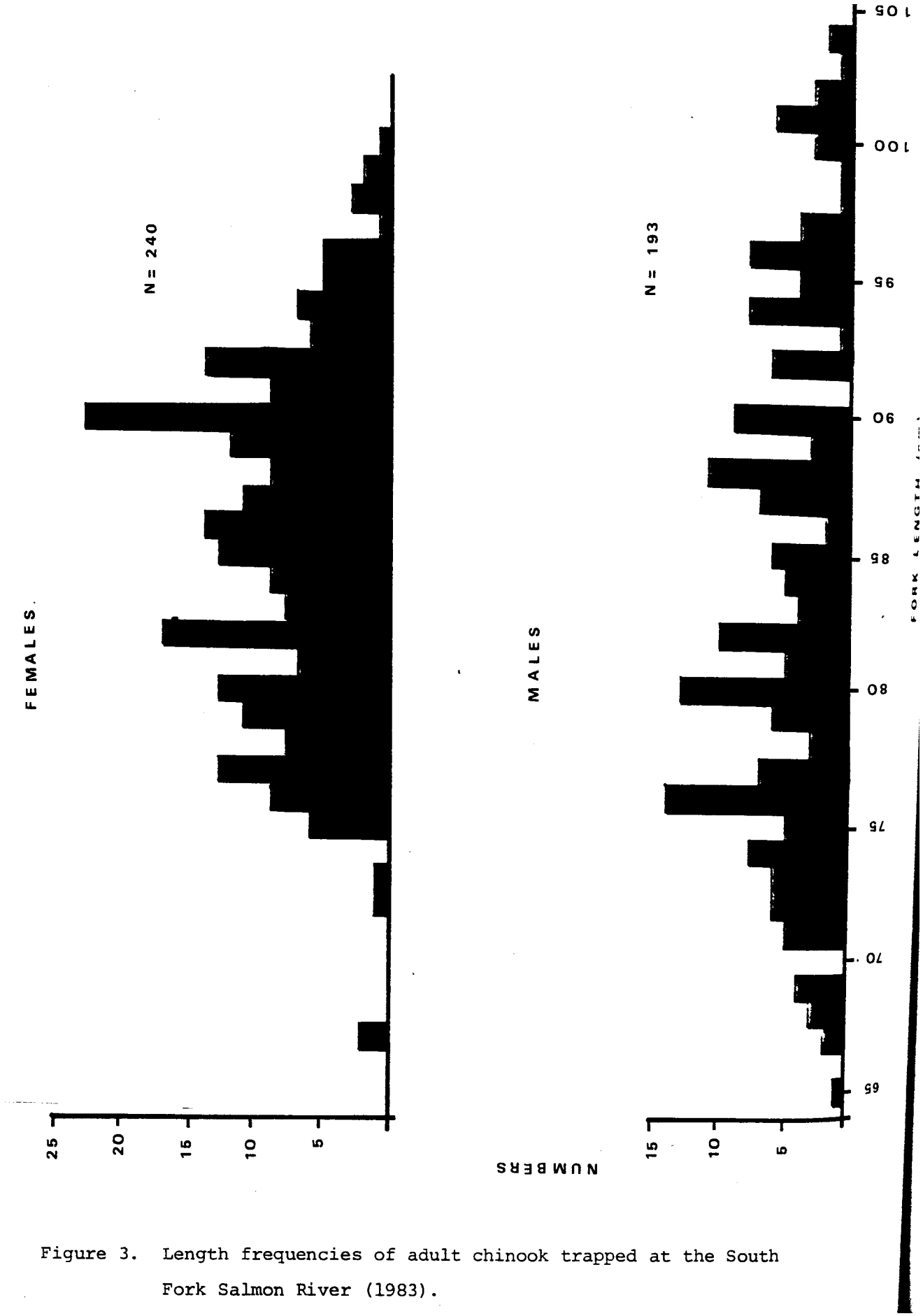


Figure 3. Length frequencies of adult chinook trapped at the South Fork Salmon River (1983).

Figure 3 (con't).

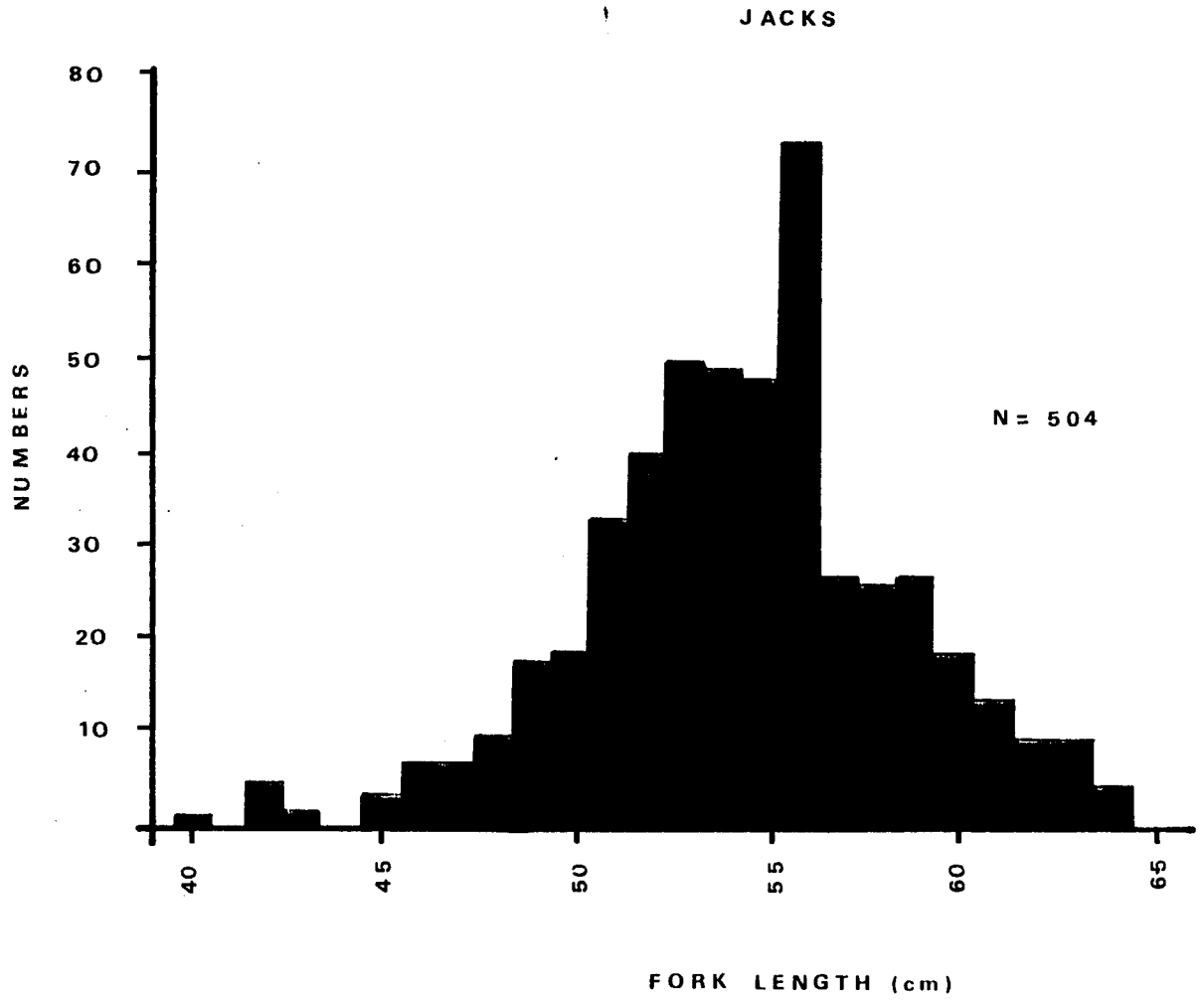


Table 3. South Fork Salmon River summer chinook egg take and percent eye-up (1983).

Lot #	Date	Eggs taken	Eggs eyed	% Eye-up
1	8/8	58,016	30,000	51.7
2	8/11	19,320	13,300	68.8
3	8/15	46,410	49,100	100+
4	8/18	110,400	105,156	95.2
5	8/22	188,480	166,720	88.5
6	8/25	51,840	52,416	100+
7	8/29	196,716	197,558	100+
8	9/1	21,060	20,280	96.3
9	9/6	23,400.	22,230	95.0
Totals		715,642	656,830	91.8

Number of females spawned: 180

Average eggs per female: 4,170

Table 4. Coded-wire tag recovery data (1983).

Fork Length cm	Code 2117 1981 Release (2-ocean) Males	Code 2117 1981 Release (2-ocean) Females	Code 2118 1981 Release (2-ocean) Males	Code 2118 1981 Release (2-ocean) Females	Code 2128 1981 Release (2-ocean) Males	Code 2128 1981 Release (2-ocean) Females	Code 2412 1982 Release (1-ocean) Males	Code 2413 1982 Release (1-ocean) Males
42							1	
43							3	
44							1	
45							2	1
46							3	6
47					1		3	7
48							2	3
49							1	6
50							4	7
51							8	10
52							14	8
53							19	11
54							19	11
55							18	22
56							22	22
57							15	16
58							8	17
59							6	7
60							9	5

Table 4 (con't).

Fork Length cm	Code 2117 1981 Release (2-ocean) Males	Code 2117 1981 Release (2-ocean) Females	Code 2118 1981 Release (2-ocean) Males	Code 2118 1981 Release (2-ocean) Females	Code 2128 1981 Release (2-ocean) Males	Code 2128 1981 Release (2-ocean) Females	Code 2412 1982 Release (1-ocean) Males	Code 2.413 1982 Release (1-ocean)
61							8	3
62							6	1
63							2	6
64							3	2
65							1	
66							3	1
68			1			1		
70	1							
71					1			
72		1						
73							1	
74		1						
75		1						
76				2				
77		1	1					
78		1	1			3		
79		2	2	1	1	2		
80	1	1	1			1		

Fork Length cm	Code 2117 1981 Release (2-ocean) Males	Code 2117 1981 Release (2-ocean) Females	Code 2118 1981 Release (2-ocean) Males	Code 2118 1981 Release (2-ocean) Females	Code 2128 1981 Release (2-ocean) Males	Code 2128 1981 Release (2-ocean) Females	Code 2412 1982 Release (1-ocean) Males	Code 2413 1982 Release (1-ocean) Males
81	1							
82	2	2			1	2		
83		3	1	3		2		
84		1	1	1				
85	2	1	1	1		1		
86	1	1				1		
87		1			1			
90	1		1					
92					1			
93	1							
94	1							
100					1			
Totals	11	17	10	8	7	13	182	172

Code 2117 and 2413 were vaccination control groups
Code 2118 and 2412 were vibrio vaccinated groups
Code 2128 was a placebo group

Note: Eighteen snouts recovered contained no tag and one ad-clipped female was released upstream for natural spawning.

Table 5. Travel time of jaw-tagged summer chinook jacks from Lower Granite Dam to the South Fork Salmon River trap (1983).

Jaw tag #	Date tagged Lower Granite	Date trapped So.Fk trap	Travel days
G 1811	7/3	-	-
G 1812	7/12	-	-
G 1813	7/17	8/7	22
G 1814	7/17	8/6	21
G 1815	7/17	8/4	19
G 1816	7/18	8/8	22
G 1821	7/26	-	-
G 1822	7/27	-	-
G 2244	6/14	-	-
G 2245	6/21	-	-
G 2247	6/27	-	-
G 2248	6/28	-	-
G 2249	6/30	-	-
G 2250	7/7	7/31	25
G 2251	7/17	8/7	22
G 8371	6/17	8/8	53
G 8373	6/27	-	-
G 8375	6/28	8/1	35
G 8377	7/3	8/4	33
G 8378	7/4	8/6	34
G 8380	7/11	8/2	23
G 8381	7/13	8/3	22
G 8382	7/13	-	-
G 8383	7/16	8/7	23
G 8384	7/16	-	-
G 8385	7/17	8/3	18
G 8386	7/18	8/7	21
G 8387	7/18	8/9	23
G 8388	7/25	8/10	19

Average travel days: 25.6

nversion

A total of 17,313 pounds of OMP-ll fish feed was fed tc produce 850 pounds of fish. A conversion of 3.0 was attained for this brood ar (Table 2). I feel the reason for such an abnormal conversion was e fact that at the time of release, actual numbers of fish on hand s far less than what we thought we had, and this may be attributed to nnabalism and/or pound count error due to the great size variability ig. 4).

sease

No major disease problems were encountered in the 1981 brood year sh this year. Although a "heavy" infestation of trichophrya was esent, no adverse effects could be observed in these fish.

SAWTOOTH BROOD YEAR 1982 Production

From the 451,902 eggs collected at the Sawtooth trapping facility d transported to McCall last year, approximately 350,000 (14,550 unds) fish are on hand for release back into the Salmon River during e spring of 1984 (Table 1).

nversion

A total of 16,461 pounds of OMP-ll fish feed *was* fed to produce ;550 pounds of fish (Table 2). A conversion ratio of 1.13 was tained for this brood *year.*

sease

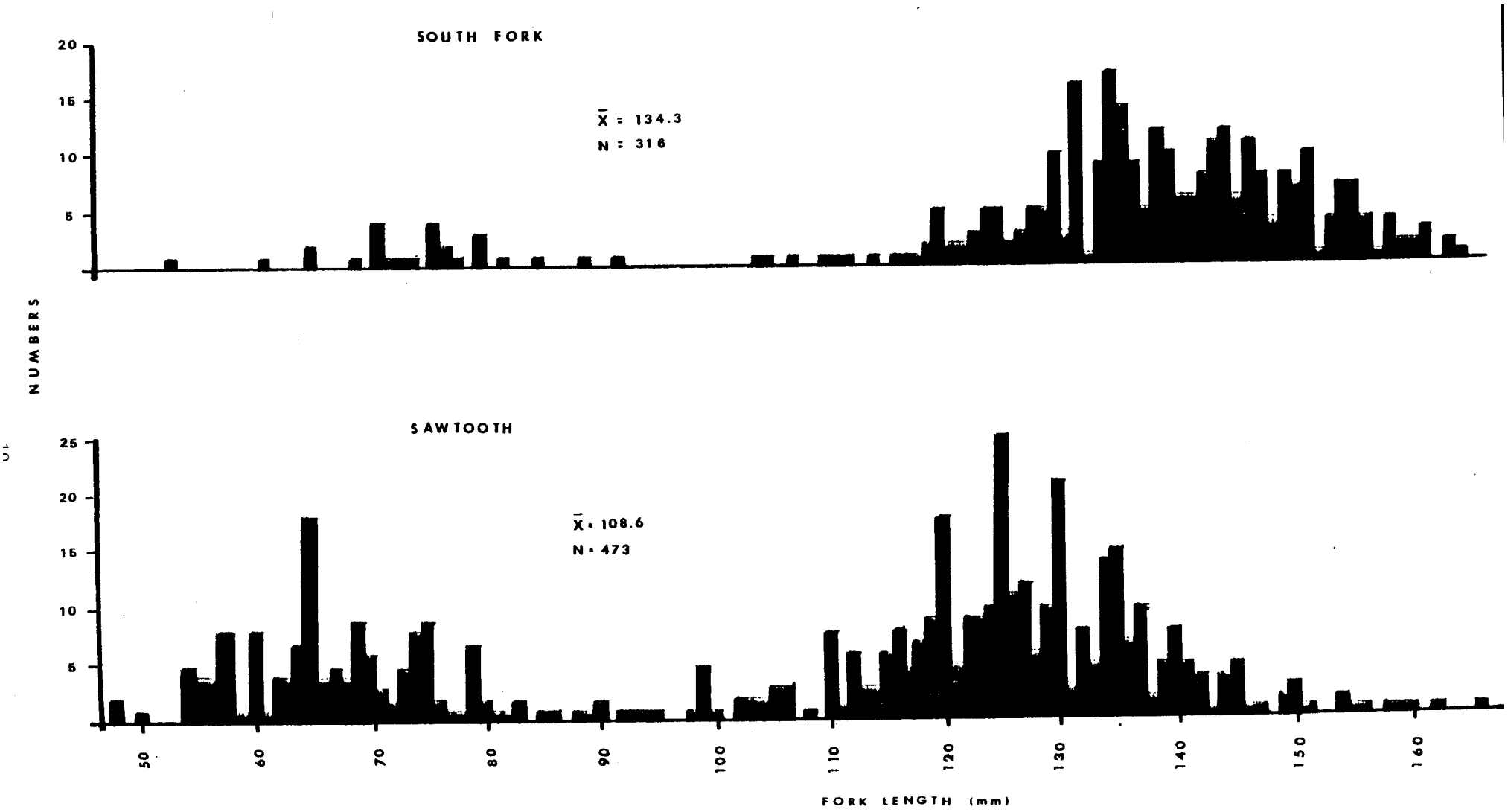
As was the case with the South Fork brood year 1982 summer chinook, follows the spring chinook. "Spring Thing" was the major mortality ffered by this brood year. Nearly 20% of the tctal production was st to this continuing problem.

BKD was also found in these fish during August, but no significant rtality appeared. These fish were also treated with erythromycin, d FAT results indicated that they had a slightly higher incidence te than the South Fork fish, even though they had a lower mortality

The gill parasite Trichophrya sp. is also present in these fish,

te.

but to date no adverse effects can be observed in the fish.


SOUTH FORK
X̄ = 134.3
N = 316
SAWTOOTH
X̄ = 108.6
N = 473
NUMBERS
FORK LENGTH (mm)
20
15
10
5
25
50
60
70
80
90
100
110
120
130
140
150
160

SAWTOOTH BROOD YEAR 1983

Again this year, a temporary weir and fish trap were installed in the Salmon River at the Sawtooth Hatchery site for the purpose of trapping adult spring chinook salmon (Rogers 1983). Returning adults were collected by IDFG personnel and held until they were ready to spawn. A total of 128 females were spawned, yielding 650,196 eggs, which were transported by air to the McCall Hatchery, where they will be hatched and reared (Table 6). Resulting smol•ts will be released back into the Salmon River, above the hatchery, in the spring of 1985.

SPECIAL STUDIES

Coded-Wire Tagging

In February 1983, Rod Duke and his tagging crew differentially coded-wire tagged, adipose fin clipped and freezebranded one group each from the 1981 brood year summer and spring chinook. The summer chinook group contained 62,188 fish, of which 24,862 were freezebranded with a "T" on the right dorsal surface (RD-T-1). The spring chinook group contained 88,616 fish, of which 26,566 were branded with a " " on the right dorsal surface (RD-T-2).

Freezebranding was done in order to identify these fish as McCall fish during the collection and transportation operation at Lower Granite Dam. The summer chinook were released at the South Fork Salmon River during 4-7 April 1983, and branded fish were observed at Lower Granite during the period 23 April-10 June (Table 7). The spring chinook were released in the Salmon River, above Stanley on 29 March 1983 and were observed at Lower Granite during the period 9 Aprii-2 June.

FEED STUDY

Again this year, a feed study was conducted at McCall in an attempt to find a diet that would prevent "Spring Thing". A detailed report will be submitted for future publication (Hutchinson in print). The study was conducted on the 1982 brood year summer chinook and results showed that all test lots of fish contracted the disease. As was the case in last years study, OMP-IV was the best overall feed with regard to growth, conversion, etc.

NUTRITION STUDY

In a further attempt to determine the cause of "Spring Thing", the U.S. Fish and Wildlife Service Fish Cultural Development Center in

Table 6. Sawtooth spring chinook egg take and percent eye-up (1983).

Lot #	Date	Eggs taken	Eggs eyed	% Eye-up
1	8/5	13,764	11,544	83.9
2	8/9	10,800	10,440	96.7
3	8/12	17,136	18,816	100+
4	8/16	26,280	21,960	83.6
5	8/19	63,336	61,944	97.8
6	8/23	118,440	100,548	84.9
7	8/26	149,760	141,120	94.2
8	8/31	250,680	171,760	68.5
Totals		650,196	538,132	82.8

Number of females spawned: 128

Average eggs per female: 5,080

Table 7. Timing of arrival and estimated passage of branded McCall Hatchery summer chinook smolts at Lower Granite Dam (1983).

Date	Brand	Number observed	Estimated number collected	Estimated number passed
4/23-4/29	RD-T-1	59	409	1,784
4/30-5/6	"	198	905	3,935
5/7-5/13	"	93	667	2,564
5/14-5/20	"	26	219	744
5/21-5/27	"	50.	488	1,747
5/28-6/3	"	14	184	801
6/4-6/10	"	4	32	130
Totals		444	2,904	11,705

Bozeman, Montana, will be conducting a feed study on 20,000 brood year 1983 summer chinook. In a cooperative agreement, Charlie Smith was given 34,000 green eggs that were collected at the South Fork this year. The resulting fish will be used in the nutrition study, then released in the South Fork during June 1984.This study is identical to one we will be conducting at McCall next year. Results of both studies will be evaluated and compared for modification of future studies.

MISCELLANEOUS ACTIVITIES

Hatchery Completion Contract

The contract to correct construction deficiencies at the South Fork trapping facility and the hatchery was completed this year. Barton Construction Company, Boise, Idaho, completed the contract at a cost of $184,000.00. Major changes included: modification of the fish trapping area, installation of a live box near the spawning area, a security fence at the trap, a dimmer system in the hatchery building capable of simulating natural photoperiods, concrete bottoms in the outdoor rearing ponds and a drainage system around hatchery residences.

Visitors

Over 3,000 people visited the hatchery during the year. Organized tours were given to the Corps of Engineers, CH_2M Hill, and several classes from Meadows Valley and the McCall Donnelley kindergarten, grade and high schools.

Hatchery Dormitory

The dormitory is increasing in popularity among Department personnel. Over 75 Department and non-Department personnel utilized this facility for professional and personal use during the year. It was also used by our blo-aides this past summer as well as a Corps of Engineer inspector assigned' to oversee construction outlined in the completion contract.

ACKNOWLEDGEMENTS

Hatchery staff during the year included: Bill G. Hutchinson, Fish Hatchery Superintendent II; Patrick Chapman, Fish Hatchery Superintendent I; John Thorpe, Fish Culturist; David Parrish, Fish Culturist; June Morse, Dan Pfeiffer and Brian Cockrane, Biological Aides; Christie Cockerham, Laborer.

The hatchery crew would like to thank the following people for their respective contributions during the year: Harold Ramsey, 1DFG, Hagerman; Joe Lientz, U.S. Fish and Wildlife Service, Dworshak; and Charlie Smith, U.S. Fish and Wildlife Service, Bozeman, for their assistance in disease investigations.

John Hanson, U.S. Fish and Wildlife Service, Boise; Gary Willard, Roger Sommerville, Joe McMichaels, Pat Streamer and Jim Douglas, U.S. Army Corps of Engineers, for their help with construction deficiencies.

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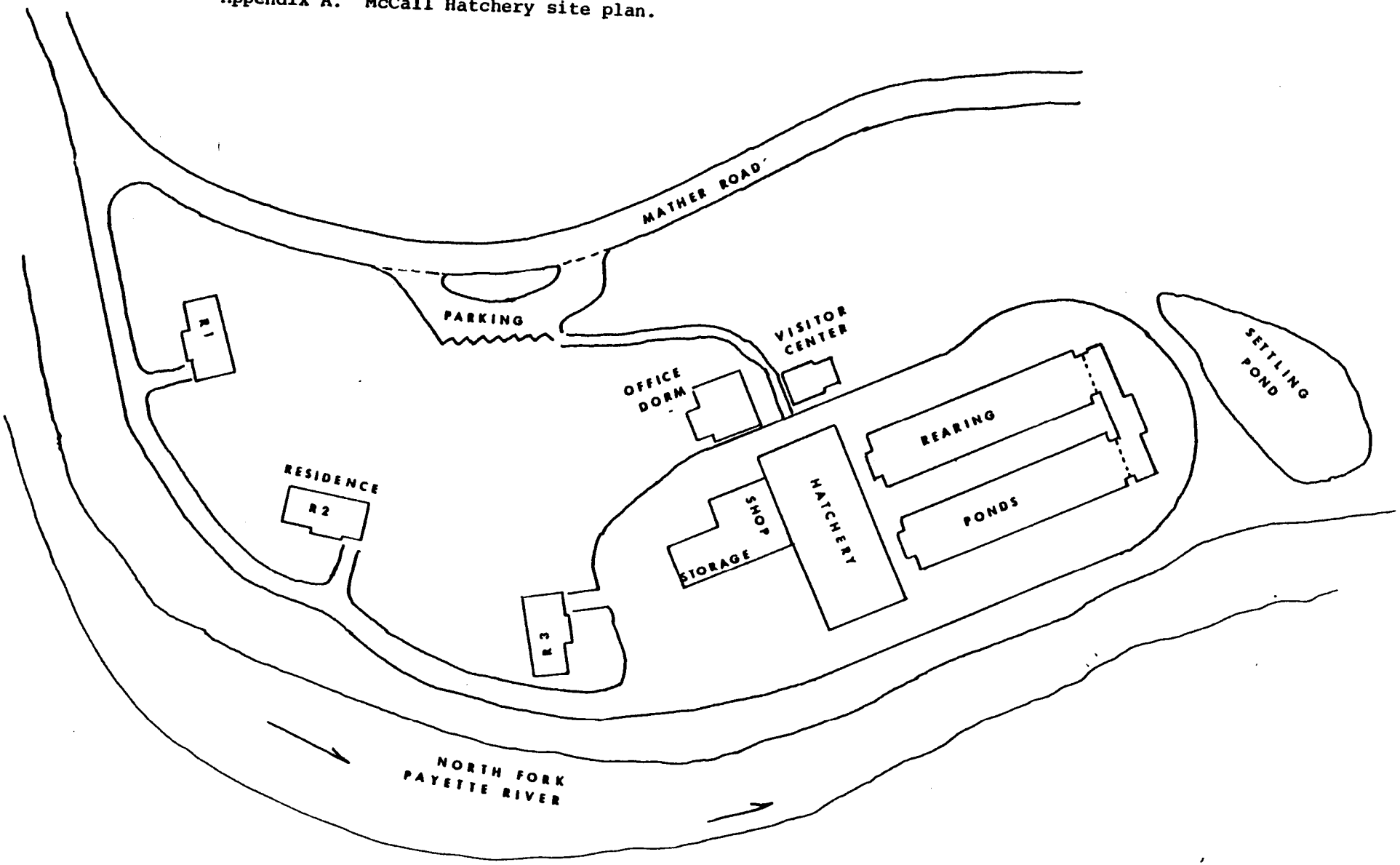
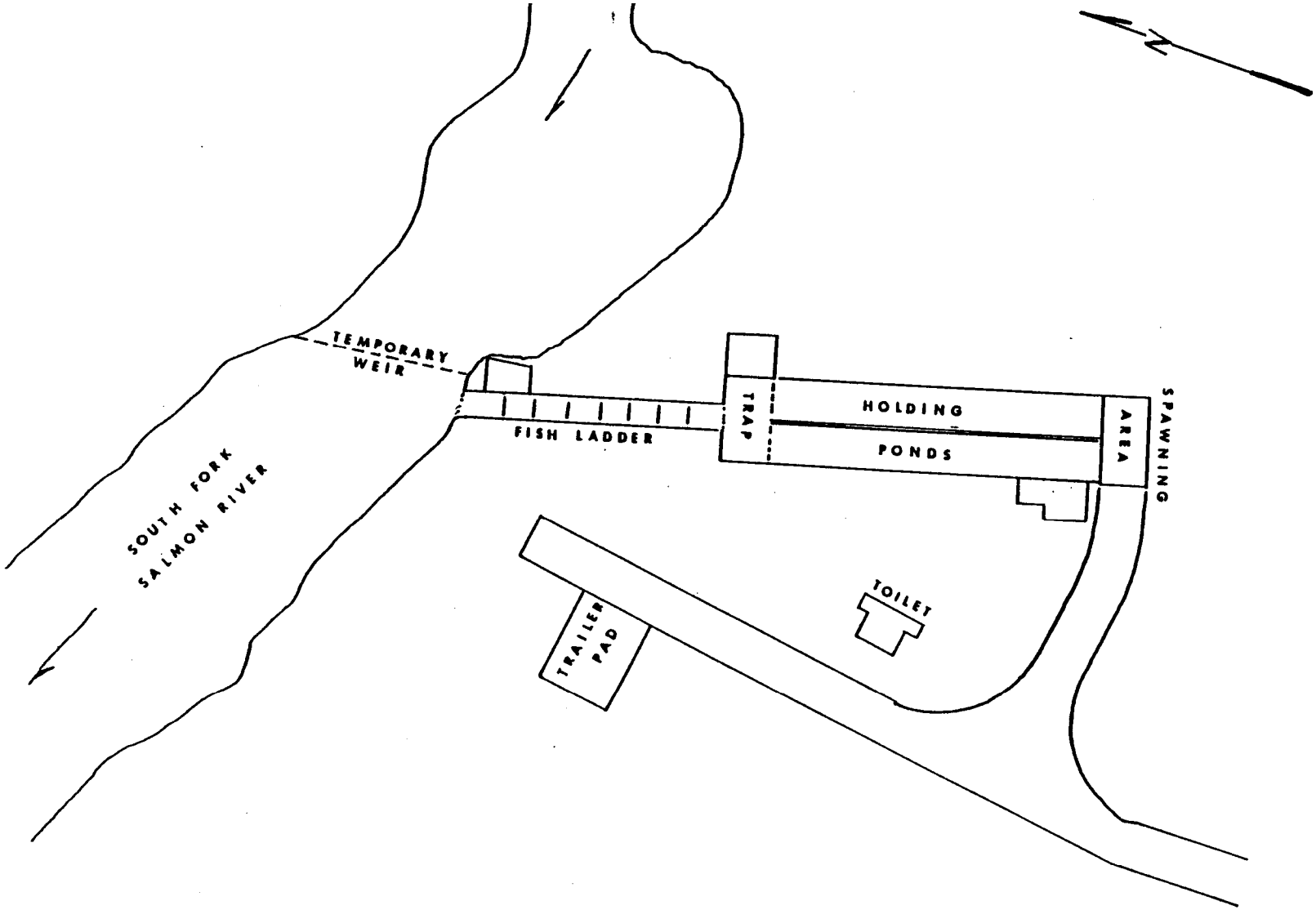
APPENDICES

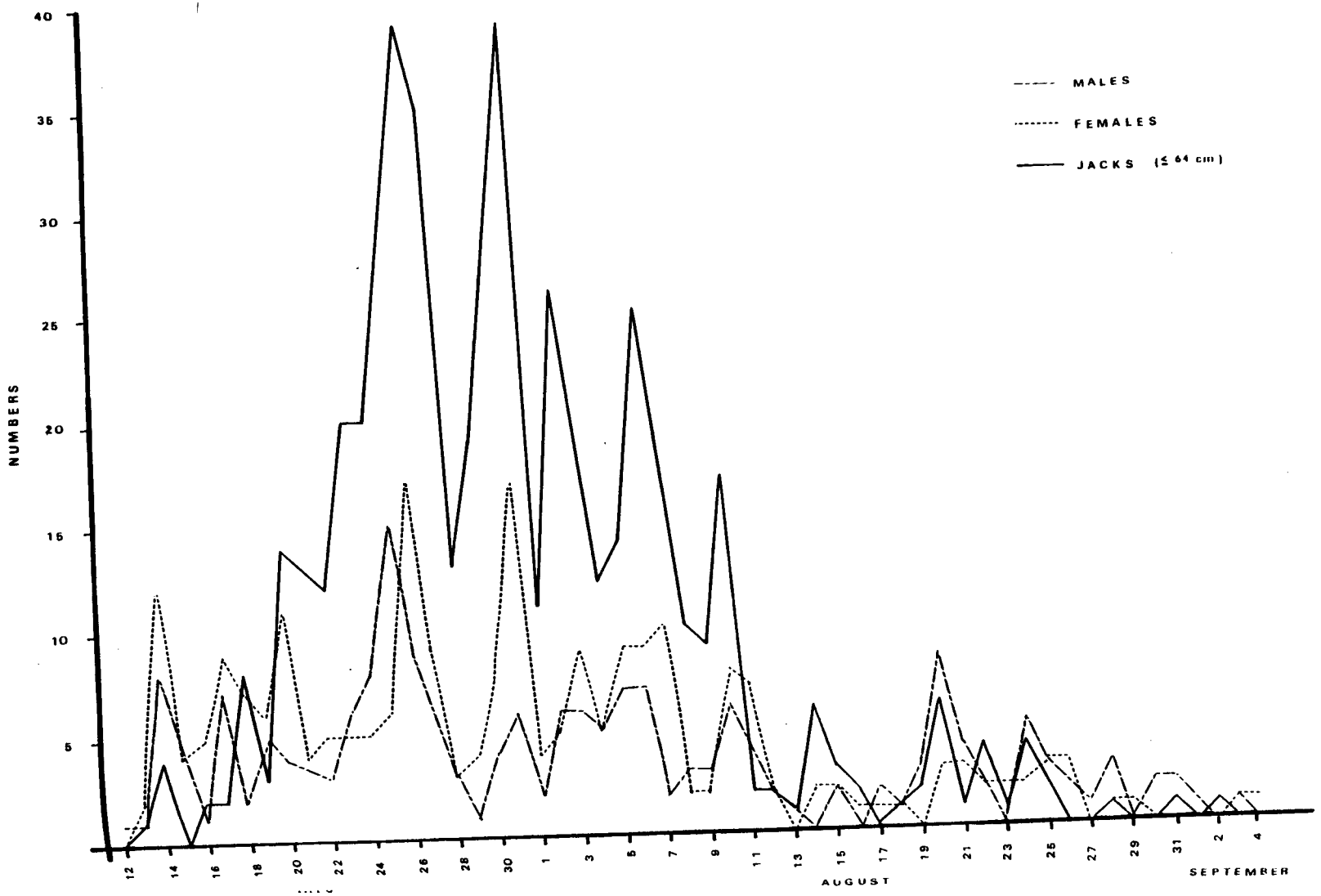
Appendix A. McCall Hatchery site plan.





Appendix B. South Fork Salmon River trapping facility site plan

Appendix C. Timing, by sex, of returning adults to the South Fork Salmon River trap (1983).



Appendix D. Lengths and numbers of returning adults to the South Fork Salmon River (1983).

Fork Length (cm)	Males	Females	Fork Length (cm)	Males	Females
40	1	0	76	14	9
42	5	0	77	7	13
43	2	0	78	3	8
45	4	0	79	6	11
46	7	0	80	13	13
47	7	0	81	5	7
48	10	0	82	10	17
49	18	0	83	4	8
50	19	0	84	5	9
51	33	0	85	6	13
52	40	0	86	2	14
53	50	0	87	7	11
54	49	0	88	11	9
55	48	0	89	3	12
56	73	0	90	9	23
57	27	0	91	0	9
58	26	0	92	6	14
59	27	0	93	1	6
60	19	0	94	8	7
61	14	0	95	4	5
62	10	0	96	8	5
63	10	0	97	4	1
64	5	0	98	1	3
65	1	0	99	1	2
67	2	2	100	3	1
68	3	0	101	6	0
69	4	0	102	3	0
71	7	0	103	1	0
72	6	1	104	2	0
73	6	1			
74	8	0	Totals	697	240
75	5	6			

Appendix E. Summary of chinook at McCall Hatchery 1978-1983.

	Brood year	Species	No. eggs	Females spawned	Eggs per female	Smolts released	Ave. ork length (mm)	Fish per pound
	1978	Summer Chinook	-	-	-	124,800	-	13.0
	1979	Summer Chinook	429,531	-	-	248,926	134.0	17.5
	1980	Summer Chinook	204,116	53	3,851	122,247	140.5	17.8
	1981	Summer Chinook	482,941	124	3,895	183,896	134.3	20.3
	1982	Summer Chinook	648,520	147	4,412	-	-	-
	1983	Summer Chinook	750,634	180	4,170	-	-	-
*	1981	Spring Chinook	647,555	160	4,047	167,895	108.6	28.7
	1982	Spring Chinook	451,902	82	5,511	-	-	-
	1983	Spring Chinook	650,196	128	5,080	-	-	-

* An additional 20,625 fish were transferred to Sawtooth in 1982 and later released.